

Idaho Disease *Bulletin*

Volume 4 Number 1

Division of Health

February 1997

Hepatitis A Outbreak Associated with a Sand-filled Play Area, Jerome County, Idaho.

[Contributed by Cheryle Becker, RN]

On September 9, 1996, South Central District Health Department (SCDHD) received a report of a confirmed case of Hepatitis A associated with an apartment complex in Jerome County, Idaho. Following is a description of the outbreak investigation performed by SCDHD and the possible association with a sand-filled playground.

Methods

On September 12, an on-site investigation of the implicated apartment complex was performed. Questionnaires were administered to all residents and blood samples were taken from symptomatic persons. During this investigation, a confirmed case of illness was defined as any person with a positive laboratory test for Hepatitis A IgM antibody with or without symptoms who was associated with the apartment complex. A probable case was defined as any person with jaundice, and a suspect case was defined as one or more of the following symptoms lasting more than 48 hours: nausea or vomiting, abdominal pain, anorexia or fatigue. Statistical analyses were performed using CDC's EpiInfo® software.

Results

A total of 15 laboratory-confirmed and two probable cases were identified for a total of 17 cases. The outbreak occurred during the months of August through November 1996. A histogram of the dates of first symptoms is shown in Figure 1. Of the 17 known cases, 11 were residents of the apartment complex; one case was a relative of a resident; and one case lived within one block of the apartment complex. Four related cases were identified at a local day care attended by the child suspected as the index case. These four cases included the day care owner, an attendee and her parents.

A review of the apartment's records showed 93 persons were living in the apartment during the time period for an attack rate of 12% of residents. Of the 17 cases identified in this outbreak, seven (41%) cases were aged 0-5 years, three cases (18%) were aged 6-10 years, three cases (18%) were aged 20-30 years and four cases (24%) were aged 31-40 years of age. Ten of 17 cases (59%) were female; of the adult cases, 86% were female.

Symptoms of affected persons at the time of interview included nausea (10/17, 59%), vomiting (14/17, 82%), abdominal pain (5/17, 29%), diarrhea (9/17, 53%), fatigue (11/17, 65%), anorexia (10/17, 59%) and jaundice (14/17, 82%). One 22-year-old female was hospitalized due to severe dehydration. During her hospitalization, her six-month-old child died of an unclear illness that was later diagnosed as SIDS. Serologic tests of this child were negative Hepatitis A.

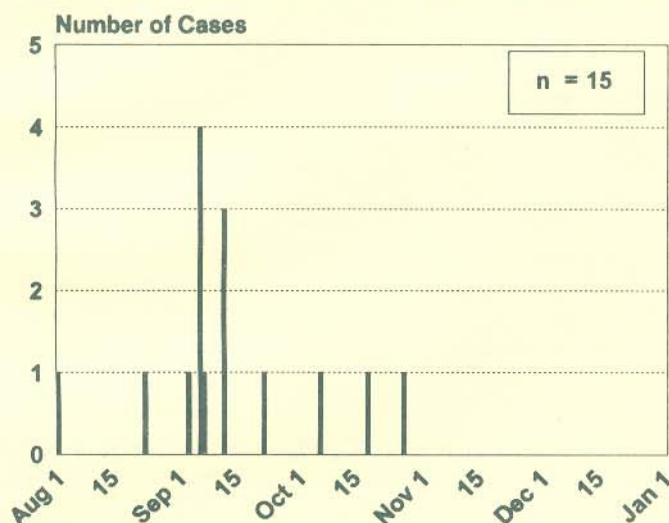
All 93 apartment residents (100%) returned questionnaires about their possible symptoms, exposure to the play area and associations with other residents. Many affected children were known to be playmates of each other but did not go to day care together. No association with common food sources was uncovered and no group or community picnics or events were held that corresponded well to the incubation period of ill persons at the peak of the outbreak. Statistical associations were found with persons 'using the play area' (OR = 11.30, 95% CI 2.3 - 57.6, $p < 0.0006$), and age < 13 (OR = 4.87, CI 1.04 - 25.72, $p < 0.02$). No association was found with apartment location within the complex or other evaluated risk factors. Adult cases frequently occurred after an incubation period following illness in their child.

Site Inspection

A site inspection was carried out September 12. The apartment complex consisted of 44 units arranged in a rectangular pattern as displayed in Figure 2. Affected persons shared a common water supply, but the low attack rate suggested this was not likely to be a source. Water samples were negative for fecal coliform. A central playground consisted of mainly grass with a small play area. The play area had a wood and metal "jungle gym" type equipment and a thick layer of sand directly under and around this equipment.

INSIDE

Control Strategy	2
Influenza in Idaho and the United States, 1996-1997 Season: An Update	3
Vaccine Preventable Diseases Summary	4

Figure 1: Onset of illness of confirmed cases of Hepatitis A.

The play area was extensively used by the residents' younger children and local area children. Toys were present in the sand indicating children had been in contact with the sand during play. By report, the index case had been observed being incontinent of stool and urine in the sand area. Playmates of the index case were among the other affected persons. No hand-washing facilities are available near the play area. Samples of the sand revealed high levels of fecal coliforms near the swing and the jungle gym hexagon area.

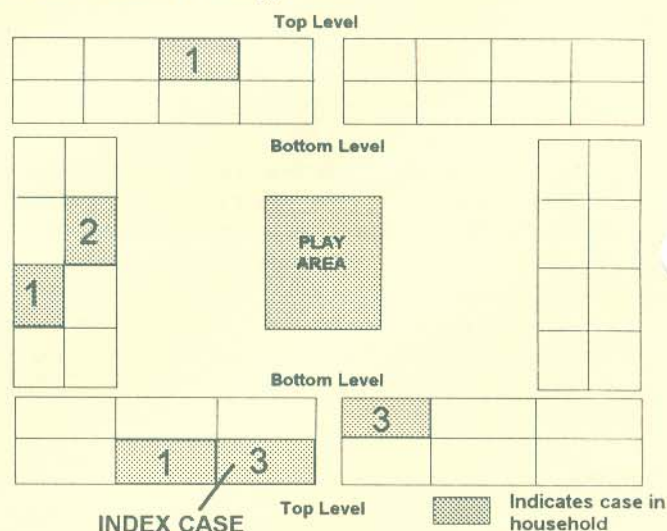
Control Strategy

Beginning September 10, serum immune globulin (Ig) was given by intramuscular injection to household contacts of confirmed and probable cases. In addition, residents of the apartment complex with children and children in the associated day care were offered Ig. On September 16, laboratory reports on the sand testing were available and a tape barrier was placed around the sand area. The owners of the apartment complex were advised to change the sand in the play area. The last associated case was October 27; no new cases have been associated with the apartment complex or day care since that time.

Hepatitis A virus (HAV) is a positive-stranded RNA virus of the family *Picornaviridae*. Its occurrence is worldwide with both

sporadic and epidemic periods. Most adults in third-world countries are immune from repeated exposure to the virus, but increased sanitation in many countries is leading to a susceptible adult population. Children are routinely susceptible to infection. In the U.S., nationwide epidemic cycles were observed with peaks in 1961, 1971 and 1989, and the disease is most common in young adults and children. In recent years, community-wide outbreaks have accounted for most disease transmission, although common-source outbreaks due to food contaminated by food handlers, contaminated produce and contaminated water continue to occur. In about 25% of outbreaks, the source of infection is unidentified.

The reservoirs for HAV are humans and, rarely, captive chimpanzees; less frequently certain other nonhuman primates. The mode of transmission of HAV is person-to-person by the fecal-oral route. The infectious agent is found in feces reaching peak levels a week or two before the onset of symptoms and diminishing rapidly after liver dysfunction or symptoms appear, which is

Figure 2: Location and number of cases among apartment residents. Jerome County, Idaho.

concurrent with the appearance of circulating antibodies to HAV. Feces can be demonstrated to be infectious until eight days after the onset of jaundice. During community-wide outbreaks, day cares are often affected and can occasionally be the source for additional spread within a community. Because of the clustering of diaper-aged children in this setting, transmission can occur through improper hygiene of workers during diapering. Hepatitis A is rarely spread by casual contact, and a study of distribution of cases in schools and neighborhoods suggests play contacts are more important than contacts in the classroom.

Taken together, a possible explanation for this outbreak is that the index case may have contaminated sand and led to infection of other playmates. Additional spread occurred to parents--mostly mothers--who were among the most symptomatic cases and likely involved in diapering of the affected children. Although not proving transmission, the association of this outbreak with

Idaho Disease Bulletin

Editor: Jesse F. Greenblatt, MD, MPH
State Epidemiologist

Published by:

The Idaho Department of Health and Welfare
Bureau of Clinical and Preventive Services

450 W. State St., P. O. Box 83720

Boise, ID 83720-0036

(208) 334-5939 (business hours)

(208) 334-4570 (after hours)

(208) 332-7346 (FAX)

1-800-632-5927 (24-hour reporting)

contaminated sand in a playground identified here is unusual. We are aware of no other studies that have implicated such transmission. However, transmission of HAV via recently contaminated fomites (toys, clothing, etc.) has been postulated as a source of infection. Control strategies in day-care settings frequently call for the wiping down and disinfection of toys and other surfaces that diaper-aged children use. Also, young children are frequently involved in the spread of infection because infections in this group are often silent, and standards of hygiene are lower in children than among adults. The 1994 Pediatric Red Book [American Academy of Pediatrics] mentions that HAV can be cultured from objects for weeks following contamination and stresses the importance of environmental decontamination.

Hepatitis A outbreaks and their control remain a difficult and recurring problem for local and state health departments. The high rate of transmission, expense of gamma globulin, dearth of symptoms in younger children and the long incubation period make identifying sources of infection difficult. It is hoped the availability of Hepatitis A vaccine may play a role in the control of these outbreaks in the future. However, its impact has been limited due to high cost (> \$100 for the three-dose series), which many families cannot afford. Until the vaccine becomes more accessible, key to our efforts will be the early identification of cases and notification of health care practitioners. In addition, the cooperation of health care practitioners through education of their patients is greatly appreciated. Providers may report a suspect or confirmed case of Hepatitis A by calling their local health department or the Idaho Department of Health and Welfare, Epidemiology Services Program, (208) 334-5939.

Influenza in Idaho and the United States, 1996-1997 Season: An Update

Influenza season is here. On December 2, the Idaho Department of Health and Welfare, Bureau of Laboratories, confirmed three cases of influenza in Idaho: one case was from Boise, one from Coeur d'Alene and one from Lapwai. All viruses identified so far in Idaho are Influenza A and those cultured are Wuhan, H3N2 strain. At the time of printing of this article, influenza will most likely be widespread throughout the state.

On November 22, the Centers for Disease Control and Prevention (CDC) reported United States influenza activity at typical levels for this time of year. Regional influenza activity, defined as outbreaks of influenza-like illness (ILI) of culture-confirmed influenza in counties with a combined population of <50% of the state's total population, was first reported from Maryland and continued to be reported from one-to-two states each week. Widespread activity was first reported in Colorado and Pennsylvania during the week ending November 23.

During the 1996-97 season, 99% of influenza viruses identified in the U.S. have been type A, and all subtyped isolates have been type A(H3N2). Because Influenza A(H3N2) has been associated with increased morbidity and mortality among the elderly, nursing homes should routinely offer all residents influenza vaccine and

develop contingency plans for rapid administration of amantadine or rimantadine during suspected or confirmed Influenza type A outbreaks. Influenza A strains from around the country tested by the CDC so far match a strain in this year's vaccine [MMWR, (45) 50, Dec 20, 1996].

Prevention of Influenza

Vaccination of high-risk persons remains the best way to prevent the disease from impacting our population adversely. This year CDC recommended health care practitioners begin vaccinating their high-risk population on September 15 and continue to offer vaccination even once influenza has been seen in a community. In Idaho, there is a high acceptance of vaccination; the vaccination rate is 64.4% among the elderly. Influenza vaccine should be offered to un-vaccinated persons at high risk for complications even after influenza is documented in the community, since there may be a protective effect for that person.

The antiviral agents amantadine and rimantadine can be used prophylactically or to reduce the severity and duration of signs and symptoms of Influenza A illness when administered within 48 hours of illness onset. Prophylaxis is only recommended for persons at the greatest risk for severe illness and complications if infected with Influenza A virus or unvaccinated persons who have frequent contact with persons at high risk. Prophylaxis may be used together with vaccination; for example, an emphysema patient who is vaccinated after the onset of influenza in his community may receive prophylaxis for two weeks, at which time the development of antibodies is expected. Prophylaxis does not interfere with the development of antibodies.

Surveillance for influenza in Idaho

Surveillance is an important part of public health's effort to monitor influenza activity in the state. The State Bureau of Laboratories has been conducting surveillance for influenza for many years, with the help of primary care doctors around the state as part of a sentinel surveillance system. Each fall participating doctors are sent kits for sampling the nasopharyngeal flora; swab samples taken from persons suspected of having influenza are sent back to the state laboratory. This is how influenza is first confirmed in Idaho each year.

The CDC conducts national influenza surveillance annually from October to May to monitor influenza activity and to detect antigenic changes in the circulating strains of influenza. Idaho participates in this surveillance, in which the state epidemiology program reports how much ILI or culture-confirmed influenza is circulating in the state. These reports are based on the level of influenza activity reported by district epidemiologists and other health care practitioners in local communities. Some viral isolates are sent to the CDC for comparison with other strains around the nation and the vaccine strains.

Beginning in 1997, Boise will become part of the CDC's 121 City Influenza / Pneumonia Mortality Surveillance System. Each week

during the survey period the number of deaths in participating cities due to influenza and pneumonia is reported to the CDC. This surveillance system is based on the fact that a fraction of persons with influenza will die from the disease or related pneumonia; and during the influenza season, these excess deaths can be monitored throughout the nation. By monitoring deaths due to pneumonia and influenza, the CDC can better evaluate the effect the influenza epidemic is having on the country and vaccine efficacy.

One other method to measure influenza activity in Idaho is being added this year. School nurses are reporting the percent of children who are absent each week to the state epidemiology program. It is hoped this reporting will identify a sudden increase in absenteeism that may herald or represent the onset of influenza in a community. Early influenza activity in the Lewiston area was picked up this way. This surveillance system monitors more than 24,000 school-aged children.

The state health department is eager to improve our surveillance for influenza. Any health-care provider interested in participating in the viral-culture-based sentinel system may contact their local health department or the State Bureau of Laboratories (334-2235, ext. 228) for further information.

Vaccine Preventable Diseases Summary

Disease	11/1/96 THRU 12/31/96	1997 YTD	1996 YTD
Invasive <i>H. influenza</i> Type B	1	0	1
Hepatitis B	3	0	11
Mumps	0	0	0
Rubella	0	0	0
Rubeola	3	1	0
Pertussis	14	70	0

*No cases of paralytic polio, tetanus, congenital rubella syndrome or diphtheria have been reported.

**A large outbreak of pertussis occurred in Northern Idaho during early 1995 and 1996.

For 24-hour reporting, 1-800-632-5927

Costs associated with this publication are available from the Idaho Department of Health and Welfare. IDHW-2000-12084-8/96. COST PER UNIT \$0.20.
Printed on recycled paper

Idaho Disease Bulletin

Idaho Department of Health and Welfare
Division of Health
P.O. Box 83720
Boise, ID 83720-0036

Bulk Rate
U.S. Postage
PAID
Permit No. 1
Boise, Idaho